



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/070,056

11/08/2002

Bunji Mizuno

29288.5300

9743

20322 7590 09/21/2009
SNELL & WILMER L.L.P. (Main)
400 EAST VAN BUREN
ONE ARIZONA CENTER
PHOENIX, AZ 85004-2202

EXAMINER

ADE, OGER GARCIA

ART UNIT

PAPER NUMBER

3687

MAIL DATE

DELIVERY MODE

09/21/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/070,056	MIZUNO ET AL.	
	Examiner	Art Unit	
	GARCIA ADE	3687	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 June 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 17-23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 17-23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)
2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)
3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____. | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
5) <input type="checkbox"/> Notice of Informal Patent Application
6) <input type="checkbox"/> Other: _____. |
|---|--|

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on **06.12.2009** has been entered.

Response to Amendment

2. Applicants' "Request for Continued Examination" filed on **June 12, 2009** has been considered.

Claims 1-16 have been cancelled, and **claims 17-23** have been amended.

Claims 17-23 remain pending in this application.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. **Claims 17-23** are rejected under 35 U.S.C. 103(a) as being unpatentable over Cheung US 6,524,872 in view of Mazur [US 3,697,873], and further in view of Alexander [US 4,090,132].

As per claims 17 and 22, Cheung discloses a device comprising:

a current-ON timer, the current-ON having a transistor with a predetermined lifetime, wherein when a power is supplied to the device, the transistor is in an ON state, the current-ON is configured to record information indicating whether the total current-ON time of the television has exceeded the predetermined lifetime of the transistor, for estimating a lifetime of the device [see at least the abstract (e.g. ***lifetime of a particular transistor device by measuring the change in transconductance as a function of time for a given device over a short period of time***)].

Cheung discloses all elements per claimed invention as mentioned above. Cheung does not explicitly disclose that the device is a television. However, Mazur discloses Elam discloses a method for excess carrier lifetime testing of semiconductor

materials by the use of ultrasonically soldered contacts in obtaining open-circuit voltage decay measurements of a conventional CRT tube (television) [see Mazur: the abstract, paragraph bridging columns 4 and 5 (e.g. **detection plates 34 of a CRT tube**), and also illustrated in figure 5 (e.g. **CRT tube 36**)].

Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to incorporate the teaching of Mazur to the teaching of Cheung in order to provide a new and improved method for measuring excess carrier lifetime in semiconductor bodies by carrier decay techniques, which method is simple and fast and does not require high temperature treatment of the semiconductor body [see Mazur: summary of the invention].

The combination of Cheung and Mazur discloses all elements per claimed as mentioned above. The combination does not explicitly disclose a timer. However, Alexander discloses a measurement of the recombination lifetime of excess or injected carriers in semiconductor devices such as diodes, transistors, thyristors and similar devices with a multivibrator 90, together with counters 91 and 92, form the **timer 93** [see Alexander, column 1: lines 5-10, column 6: lines 59-65, and also illustrated in figure 2 (e.g. **block 93**)].

Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to incorporate the teaching of Alexander to the above combination in order to provide a system for measuring excess carrier lifetime accurately and rapidly by electronically measuring the slope of the open-circuit voltage decay curve and determining from this the numerical value of the carrier lifetime which

is shown in microseconds on a digital display [see Alexander: summary of the invention].

As per claims 18 and 23, Cheung discloses wherein the total current-ON time of the device has exceeded the predetermined lifetime of the transistor outside of the television device [see at least column 2: lines 12-18 (e.g. ***method to determine the lifetime of transistors under nominal operating condition involves aging the device under mildly accelerated conditions for a long period of time***)]. Cheung does not explicitly disclose wherein the device comprises a communication means and transmits the recorded information.

However, Alexander discloses wherein the device comprises a communication means and transmits the recorded information [see Alexander, figures 2 and 3, and the Examiner also notes in figure 3 there is counter that is connected to a multivibrator that are interrelating with each other to record information in a hard wired configuration, and therefore communicating with each other].

Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to incorporate the teaching of Alexander to the teaching of Cheung in order to provide a system for measuring excess carrier lifetime accurately and rapidly by electronically measuring the slope of the open-circuit voltage decay curve and determining from this the numerical value of the carrier lifetime which is shown in microseconds on a digital display [see Alexander: summary of the invention].

As per claim 19, Cheung discloses: the transistor comprises a gate, a source and a drain; the source or the drain of the transistor is connected to a constant-current circuit; and when the power is supplied to the device, a control signal is input to the gate to have the transistor in the ON state [see at least column 2: lines 1-11 (e.g. ***The hot-carrier stress for n-MOSFET typically place the device at a high drain bias with a gate bias that maximizes the substrate current for a short duration of time***), and column 3: lines 20-35 (summary of the invention)].

As per claims 20 and 21, Cheung discloses a plurality of transistors with different predetermined lifetimes wherein the plurality of transistors are arranged in parallel [see Cheung, column 2: lines 12-15 (e.g. ***method to determine the lifetime of transistors under nominal operating condition involves aging the device under mildly accelerated conditions for a long period of time***), see column 5: lines 23-28 (e.g. ***a parallel shift only***), and also illustrated in figure 6].

Cheung does not explicitly disclose a current-ON timer. However, Alexander discloses a measurement of the recombination lifetime of excess or injected carriers in semiconductor devices such as diodes, transistors, thyristors and similar devices with a multivibrator 90, together with counters 91 and 92, form the timer 93 [see Alexander, column 1: lines 5-10, see column 6: lines 59-65, and also illustrated in figure 2 (e.g. ***block 93***)].

Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to incorporate the teaching of Alexander to the above combination in order to provide a system for measuring excess carrier lifetime

accurately and rapidly by electronically measuring the slope of the open-circuit voltage decay curve and determining from this the numerical value of the carrier lifetime which is shown in microseconds on a digital display [see Alexander: summary of the invention].

Response to Arguments

6. Applicants' arguments with respect to **claims 17-23** have been considered but are moot in view of the new ground(s) of rejection.

In response to all of the limitations which Applicants dispute as missing in the applied references, including the newly added features in the **09.03.2009** amendment, have been fully addressed by the Examiner as either being fully disclosed or obvious in view of the teachings of Cheung, Mazur and Alexander based on the logic and sound scientific reasoning of one ordinarily skilled in the art at the time of the invention, as detailed in the remarks and explanations given in the preceding sections of the present Office Action and in the prior Office Action, and incorporated herein. One cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

In addition, the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would

have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981).

The elements are all known but not combined as claimed. The technical ability exists to combine the elements as claimed and the results of the combination are predictable. When combined, the elements perform the same function as they did separately. The prior art differs from the claim by the substitution of some components. The substituted components were known. The technical ability existed to substitute the components as claimed and the result of the substitution is predictable.

Conclusion

7. The following prior art made of record and not relied upon is considered pertinent to Applicants' disclosure:

Okada **US Patent No.: 6,633,177 B1**, teaches a method for measuring the lifetime of a semiconductor integrated circuit, including MOS devices like MOS transistors, and also relates to a method for reliability testing of the circuit.

Cohn **US Patent No.: 4,331,977**, teaches an electronic switch is provided for use in a battery-powered portable television receiver which eliminates power supply current drain when the television receiver is turned off. Coupled transistors are rendered conductive by means of either a clock or a manually switched input signal to provide a direct voltage battery output to television receiver circuitry.

Contact Information

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to GARCIA ADE whose telephone number is (571)272-5586. The examiner can normally be reached on M-F 8:30AM - 5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew S. Gart can be reached on 571.272.3955. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a SPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Garcia Ade/
Examiner, Art Unit 3687

Garcia Ade
Examiner
Art Unit 3687

ga